

CE810 - Game Design 2

Game Balance

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What is Balance?

Question

What is balance?

“All players have an equal chance of winning”

– Richard Bartle

Richard covered a combat example in the first part of the module.

On Strategies

- What about higher level strategies?

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- Dominant strategies

Game Balance

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- Metagaming

Metagaming - Rock Paper Scissors

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- If there are lots of A players, people will play C
- Then there are a lot of C players, so people play B
- and so on...

- What if A is significantly stronger?

Metagaming - Dominant Strategies

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Metagaming - Dominant Strategies

- What if A is significantly stronger?
- No one will use the other two strategies
- We want to encourage variety in play

Can we detect this?

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- Can we measure this?

- Academics seem to think so...

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- Alexander Jaffe et al (2012) - Restricted-Play balance framework
- Mihail Morosan - GAs for tuning parameters

Game Curves

First Move Advantage

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- Going first in tac tac toe means either a win or a draw
- White has $> 50\%$ win rate over all games
- Worse effects if you have resources
- We need a way of dealing with this

First Move Advantage

Magic Second player gets an extra card

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Go Second player gets 7.5 bonus points

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- Mulligan an extra card
- Special card worth one free Mana

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 - Which is good - I don't

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- First Move Advantage much more of a problem in Developed resource games

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 - Even if you do nothing
- Players get more skilled over time
- More skilled players exploit the advantage better

First Move Advantage - dealing with it

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 - Hearthstone's bonus much harder

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- AIs might help here - known skill levels, running lots of games help us tune our values
- Careful, our AIs might not be good measures of possible skill levels

Exercise

Investigate dominant strategy in Civ style game

- Download latest copy of the [game engine](#)
- Look at and run class “DominantStrategy”
- Create new maps that don’t display this behaviour

Watching

Extra Credits

- <https://www.youtube.com/watch?v=Bxszx60ZwGw> - Power Creep
- <https://www.youtube.com/watch?v=M3b3hDvRjJA> - Power Creep in hearthstone
- <https://www.youtube.com/watch?v=e31OSVZF77w> - Perfect Imbalance
- <https://www.youtube.com/watch?v=EitZRLt2G3w> - Balancing for skill
- <https://www.youtube.com/watch?v=0V5eq4lQ6Go> - Delta of Randomness
- <https://www.youtube.com/watch?v=TRHdIScOMWQ> - Balancing Turn based games